



Notify: Pass by Reference!

Samvera Virtual Connect, 2022-05-04

Paul Walk

Director & Founder, Antleaf

Web: <http://www.paulwalk.net>

Email: paul@paulwalk.net



www.antleaf.com




Confederation of Open Access Repositories

www.coar-repositories.org/notify/

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COAR Confederation of Open Access Repositories

The Notify Project



Principal Investigators

- Kathleen Shearer, COAR
- Paul Walk, COAR
- Martin Klein, Los Alamos National Laboratory
- Eloy Rodrigues, University of Minho

Technical Advisors

- Herbert Van de Sompel
- Patrick Hochstenbach, IDLab, Ghent University

Project Overview

On January 28, 2021, COAR launched the *The Notify Project*. The aim of the project is to development and accelerate community adoption of a standard, interoperable, and decentralised approach to linking research outputs hosted in the distributed network of repositories with resources from external services such as overlay-journals and open peer review services, using linked data notifications.

While our initial focus is on linking pre-prints and articles to peer reviews and endorsements, we will be simultaneously documenting and exploring other, emergent use-cases.

This project involves working with implementing partners to:

1. Develop and document the Notify protocol and standard practices that will enable interactions across diverse repositories and services, based on linked data notifications
2. Contribute to the technical development of open source platforms (repositories and services) so the Notify protocol can be widely adopted

Links and Resources

- [Notify documentation](#)
- [CNI presentation – March 2021](#)

Open "https://www.coar-repositories.org/files/internet-gdaa3ab240_1280-e1643986474454.jpg" in a new tab

April 7th, 2022

www.coar-repositories.org


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ing a sustainable, global knowledge commons


ion that brings together individual repositories and repository networks in order to cies and practices, and act as a global voice for the repository community.


ABOUT COAR

News and Updates

 mpted from the

 **Open Consultation – COAR Community Framework for Best Practices in Repositories**
February 7th, 2022

 **CCSD and COAR announce plans to launch preprint directory**
February 1st, 2022

 **Scientific knowledge must be protected to ensure a Europe fit for the digital age**

Context

Context

- we have a globally-distributed network of repositories
 - this is naturally resistant to monopolistic capture and control
- we have the Web and all the open standards we need
 - all of which is mainstream technology
- **Opportunity:**
 - the perceived importance of repository content is growing
 - increased importance of pre-prints
 - increasing number of data repositories
 - services are being created to exploit repository content
 - peer-review
 - endorsement

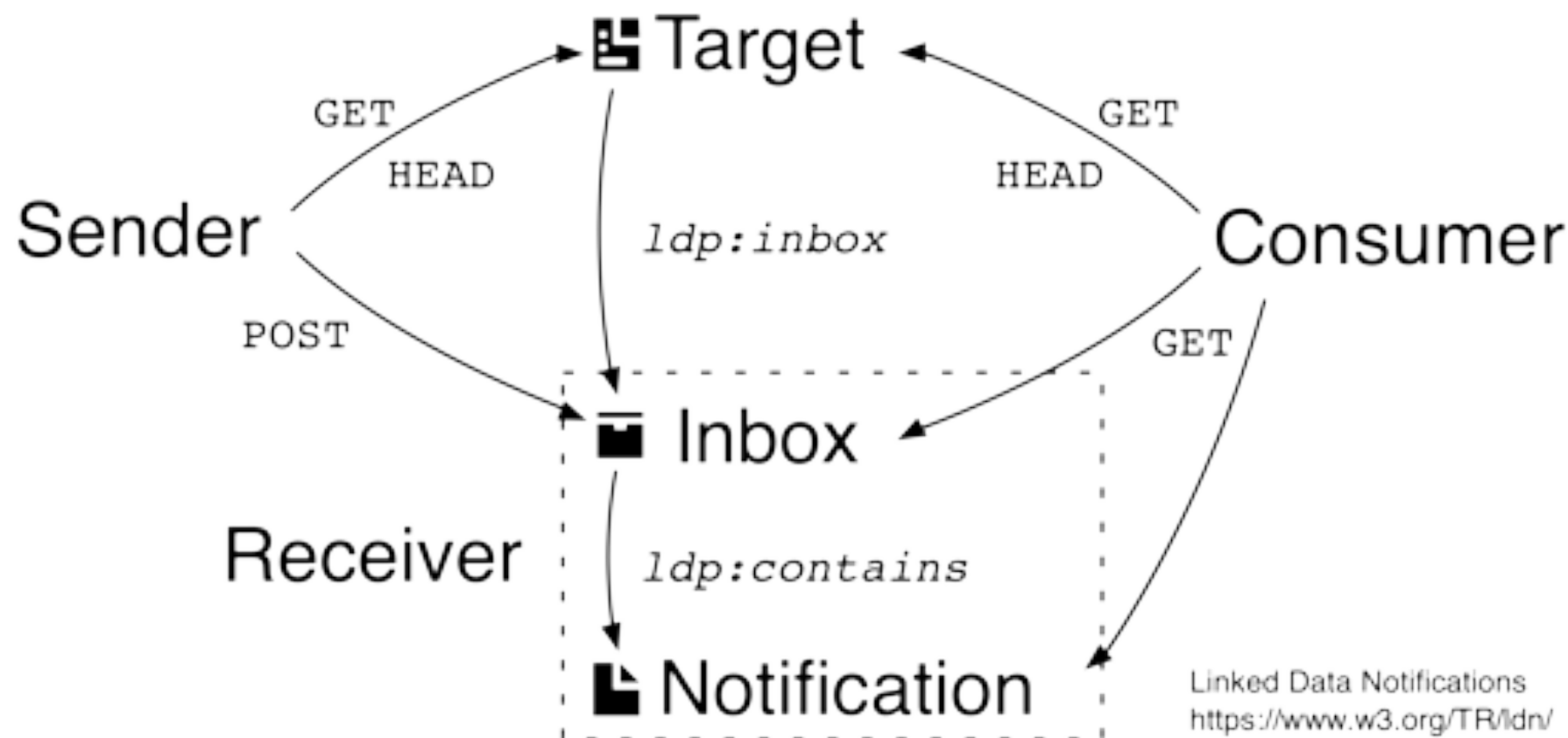
Strategy / Principles

- connect the resources in open-access repositories to related resources in other repositories or services
- do this in a **resource-oriented** way
 - **pass by reference**, not ~~pass by copy~~
 - use the Web - everything is accessible at a URL
 - connect those URLs
- take advantage of the **distributed** network of repositories and services
 - reduce or remove our reliance on centralised services
- use a general solution
 - don't create a new integration mechanism for each new service
 - expensive - requires development effort and expertise
 - increases "technological debt" over time - too much to maintain

Technical approach: Asynchronous messaging

Linked Data Notifications

W3C Recommendation 2 May 2017



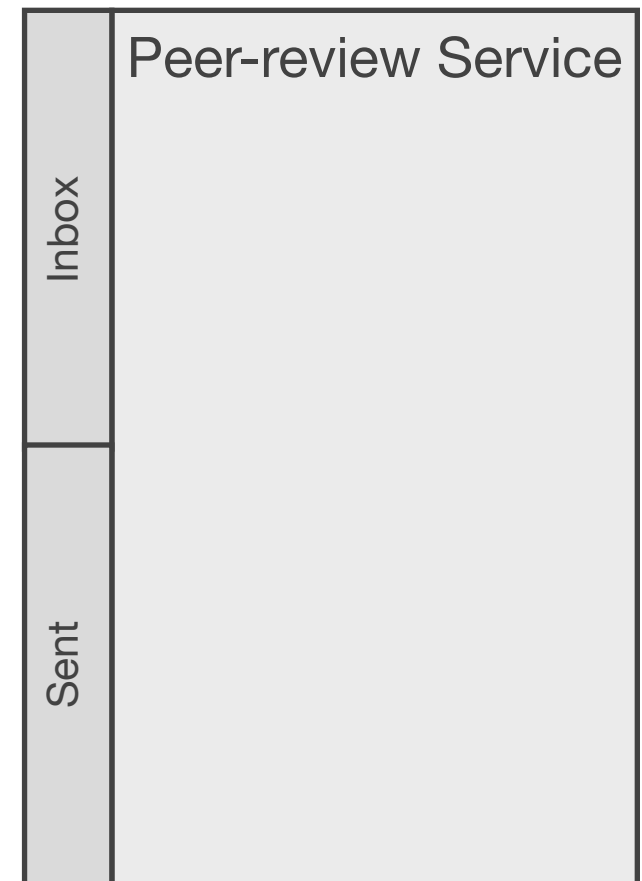
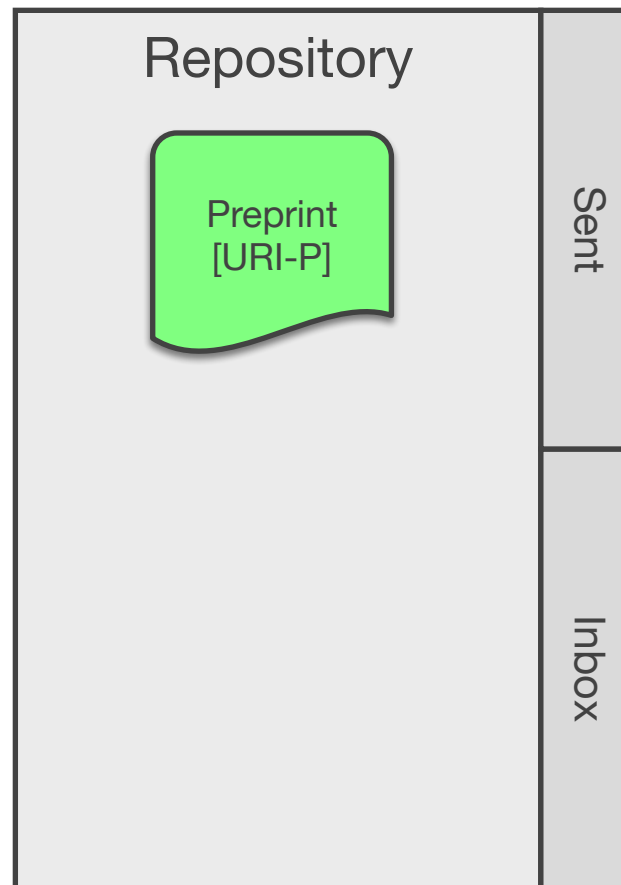
Activity Streams 2.0

W3C Recommendation 23 May 2017

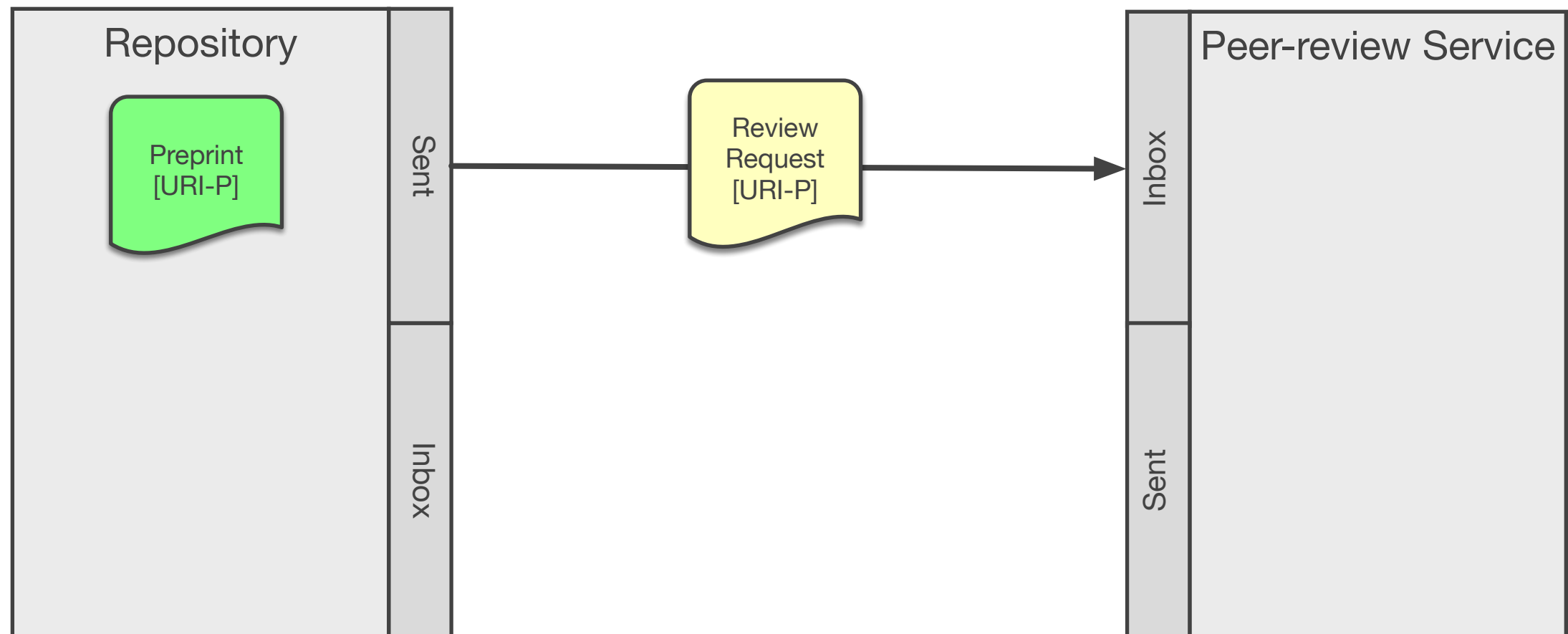


Example Use-case

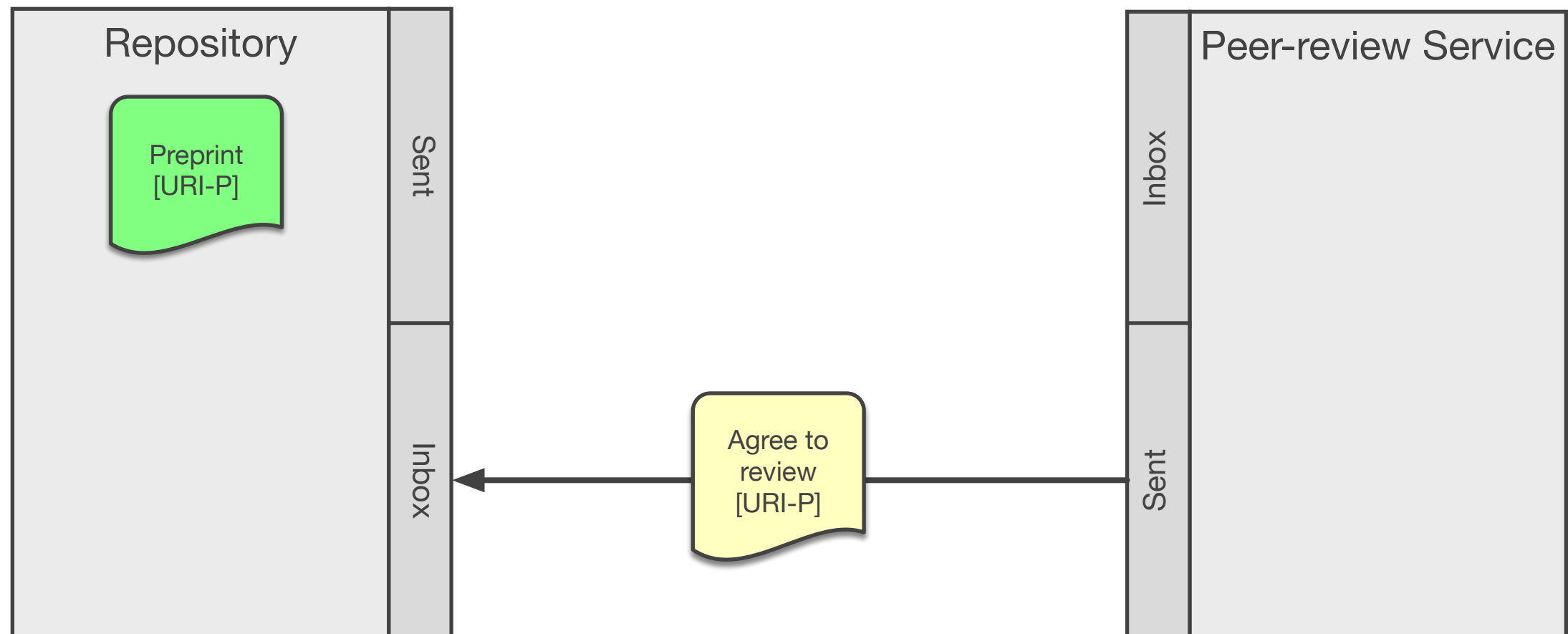
Use-case: Peer review



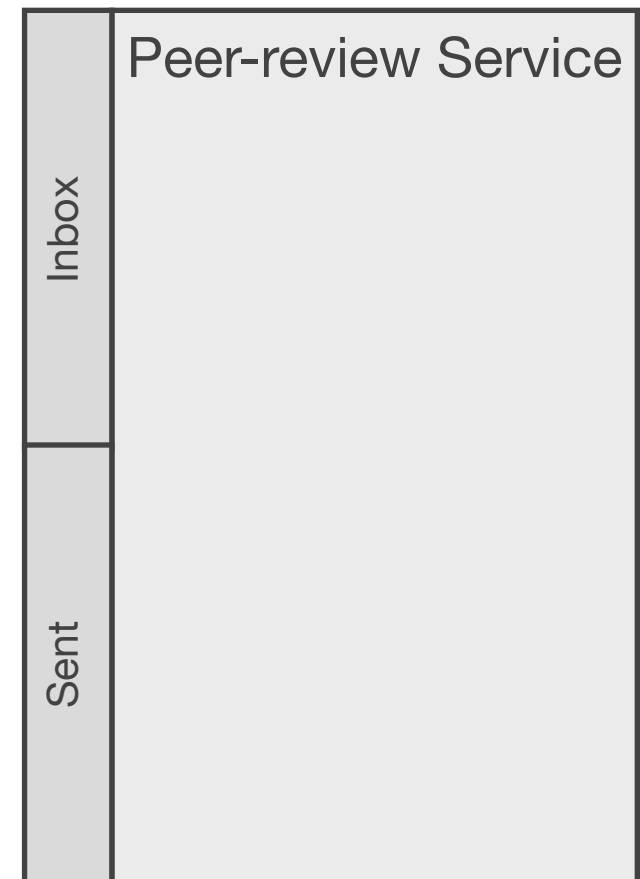
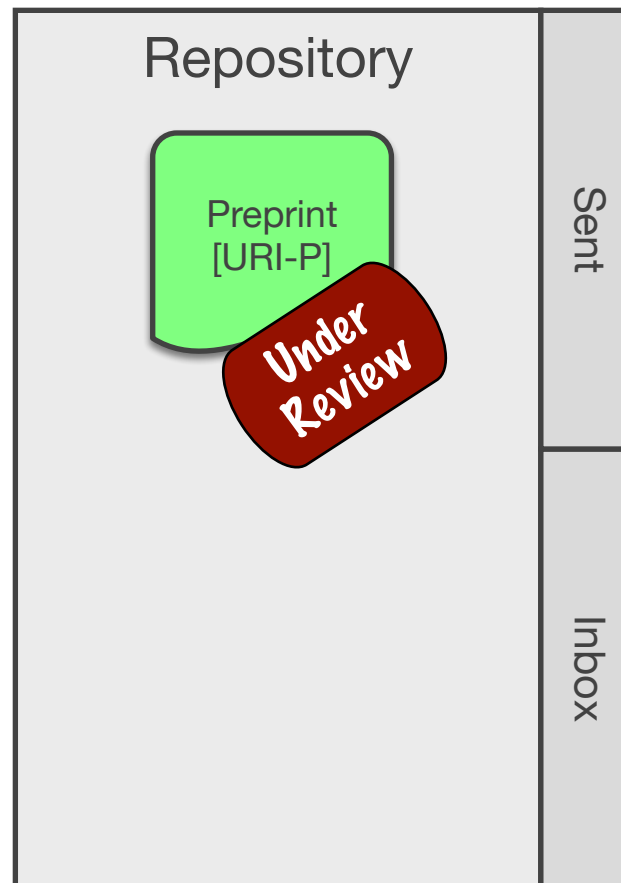
Repository requests peer-review of a pre-print



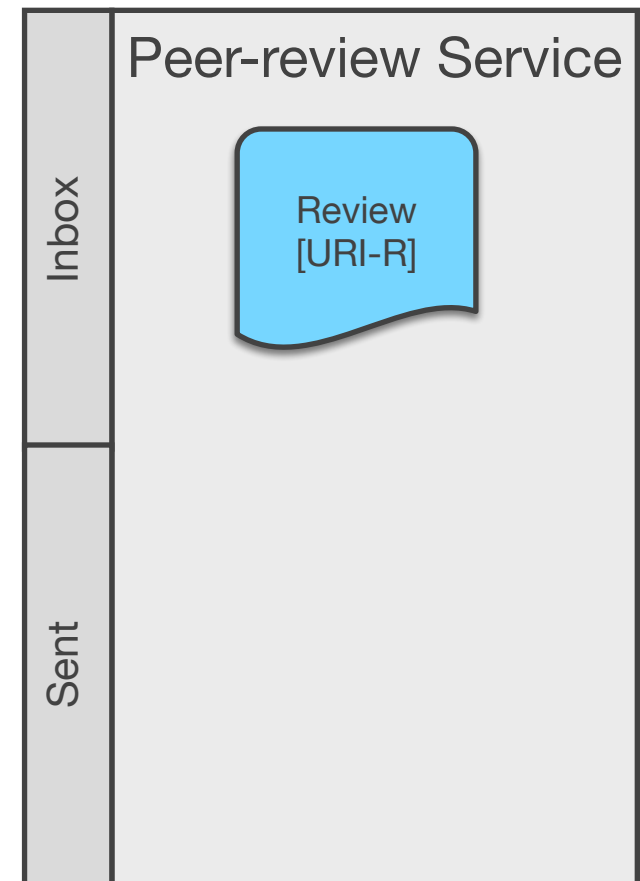
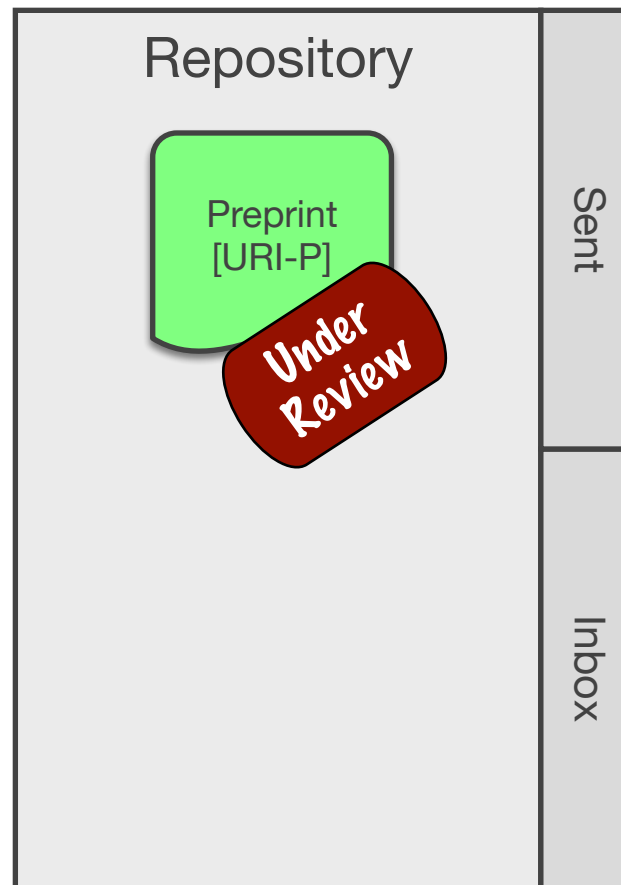
Review service considers, agrees to review



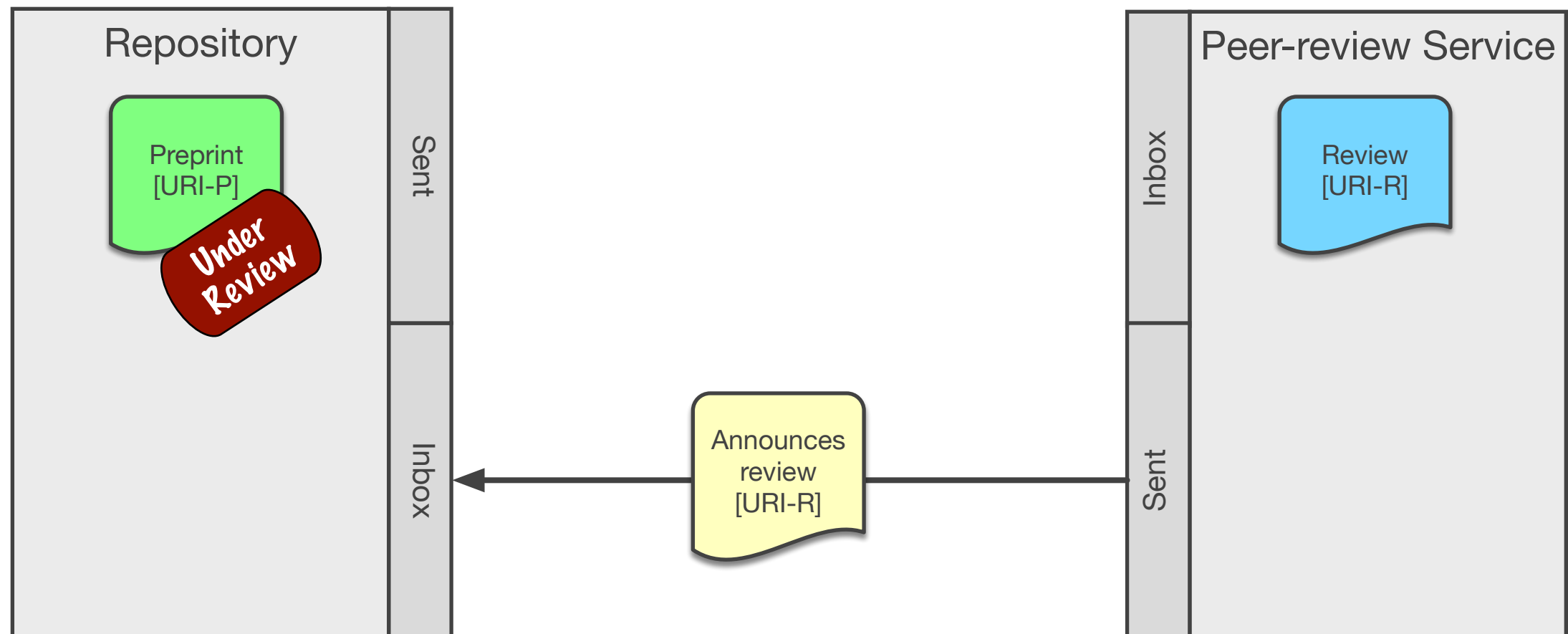
Repository labels pre-print as "under review"



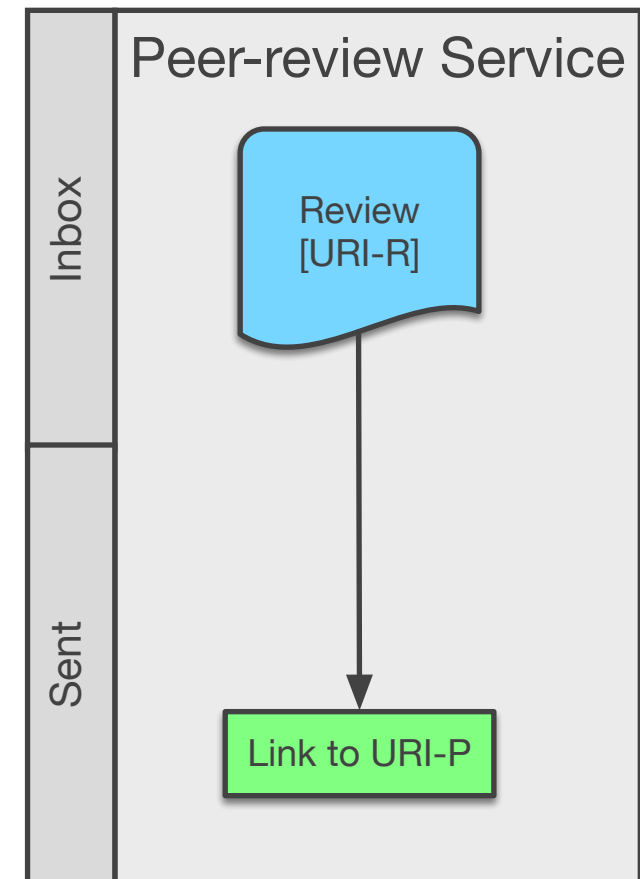
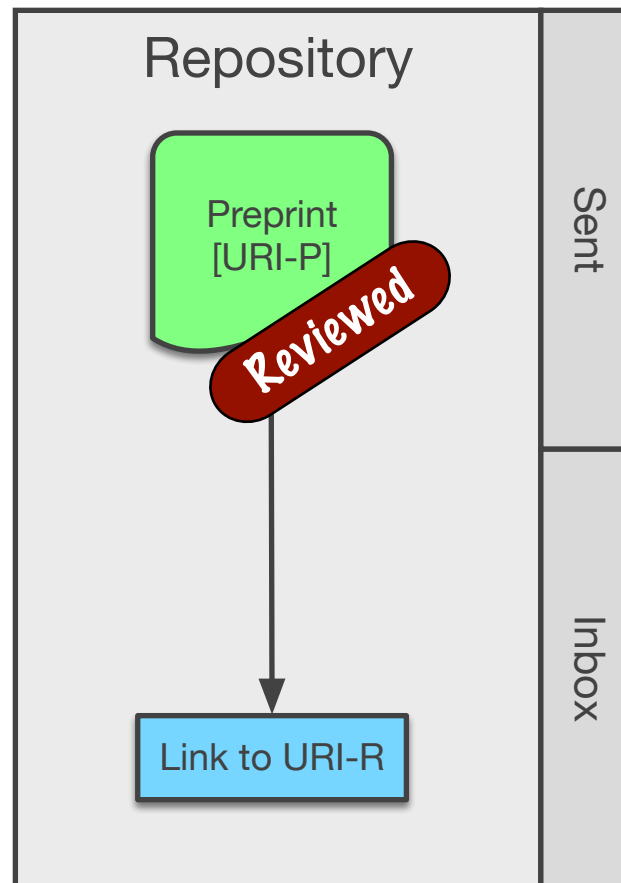
Review service produces review



Review service announces review



Preprint & review are now linked to each other



Notification patterns

Notification payloads

- Based on W3C Activity Streams 2.0
- RDF, serialised as JSON-LD
- Minimal metadata, no content:
 - **Pass by reference!!**
- We add very little to the vocabularies used:

```
{
  "@context" : {
    "@vocab": "http://purl.org/coar/notify_vocabulary/" ,
    "ietf": "http://www.iana.org/assignments/relation/",
    "coar-notify": "http://purl.org/coar/notify_vocabulary/",
    "sorg": "http://schema.org/",

    "ReviewAction": "coar-notify:ReviewAction",
    "EndorsementAction": "coar-notify:EndorsementAction",
    "IngestAction": "coar-notify:IngestAction",
    "ietf:cite-as": {
      "@type" : "@id"
    }
  }
}
```

```
{
  "@context": [
    "https://www.w3.org/ns/activitystreams",
    "https://purl.org/coar/notify"
  ],
  "actor": {
    "id": "https://review-service.com",
    "name": "Review Service",
    "type": "Service"
  },
  "context": {
    "id": "https://research-organisation.org/repository/preprint/201203/421/",
    "ietf:cite-as": "https://doi.org/10.5555/12345680",
    "type": "sorg:AboutPage",
    "url": {
      "id": "https://research-organisation.org/repository/preprint/201203/421/content.pdf",
      "media-type": "application/pdf",
      "type": [
        "Article",
        "sorg:ScholarlyArticle"
      ]
    }
  },
  "id": "urn:uuid:94ecae35-dcfd-4182-8550-22c7164fe23f",
  "inReplyTo": "urn:uuid:0370c0fb-bb78-4a9b-87f5-bed307a509dd",
  "object": {
    "id": "https://review-service.com/review/geo/202103/0021",
    "ietf:cite-as": "https://doi.org/10.3214/987654",
    "type": [
      "Document",
      "sorg:Review"
    ]
  },
  "origin": {
    "id": "https://review-service.com/system",
    "inbox": "https://review-service.com/system/inbox/",
    "type": "Service"
  },
  "target": {
    "id": "https://research-organisation.org/repository",
    "inbox": "https://research-organisation.org/repository/inbox/",
    "type": "Service"
  },
  "type": [
    "Announce",
    "coar-notify:ReviewAction"
  ]
}
```


Patterns

Announcement (in response to offer)

This pattern is used to announce the outcome of an activity, sometimes (but not always) linking an original resource (referenced in **context**) to a new, related resource (referenced in **object**), in response to an offer made in a previous notification.

This pattern is used in the following scenario steps:

- [Announce Endorsement](#) from scenario 2: Author requests review with possible endorsement (via repository)
- [Announce Ingest](#) from scenario 6: Author submits to overlay journal using repository to host resource and reviews
- [Announce Review](#) from scenario 2: Author requests review with possible endorsement (via repository)
- [Announce Review](#) from scenario 5: Repository requests review (on behalf of corresponding author)
- [Announce Review](#) from scenario 9: Author requests reviews from review service, via repository
- [Announce Review](#) from scenario 9: Author requests reviews from review service, via repository

Properties

The **@context** must include:

- [Activity Streams 2.0](#)
- [Notify](#)

id

Notify notifications must describe an AS 2.0 **activity**. The **activity** has an **id** which must be a URI, and the use of URN:UUID is recommended. An HTTP URI may be used instead, but in such cases the URI should resolve to a useful resource.

type

The **activity** has a **type** which should include at least the value *Announce* from AS 2.0.

actor

The **activity** should have an **actor** describing the party responsible for initiating this **activity**. The **actor**:

- has an **id** which must be an HTTP URI.
- has a **type** which should be one of: *Application*, *Group*, *Organization*, *Person* or *Service* from AS 2.0.
- may have a name

context

This **activity** has a **context**. The **context** has:

- An **id** which is the HTTP URI of the "landing page" for the resource.
- A **type**.
- An **ietf:cite-as** which contains the persistent HTTP URI (sometimes called the "PID") which is to be used to cite or link to the resource.

inReplyTo

inReplyTo is specified because this is a response to a previous notification. **inReplyTo** takes the URI

Example JSON-LD Payload

[\(Get raw JSON-LD\)](#)

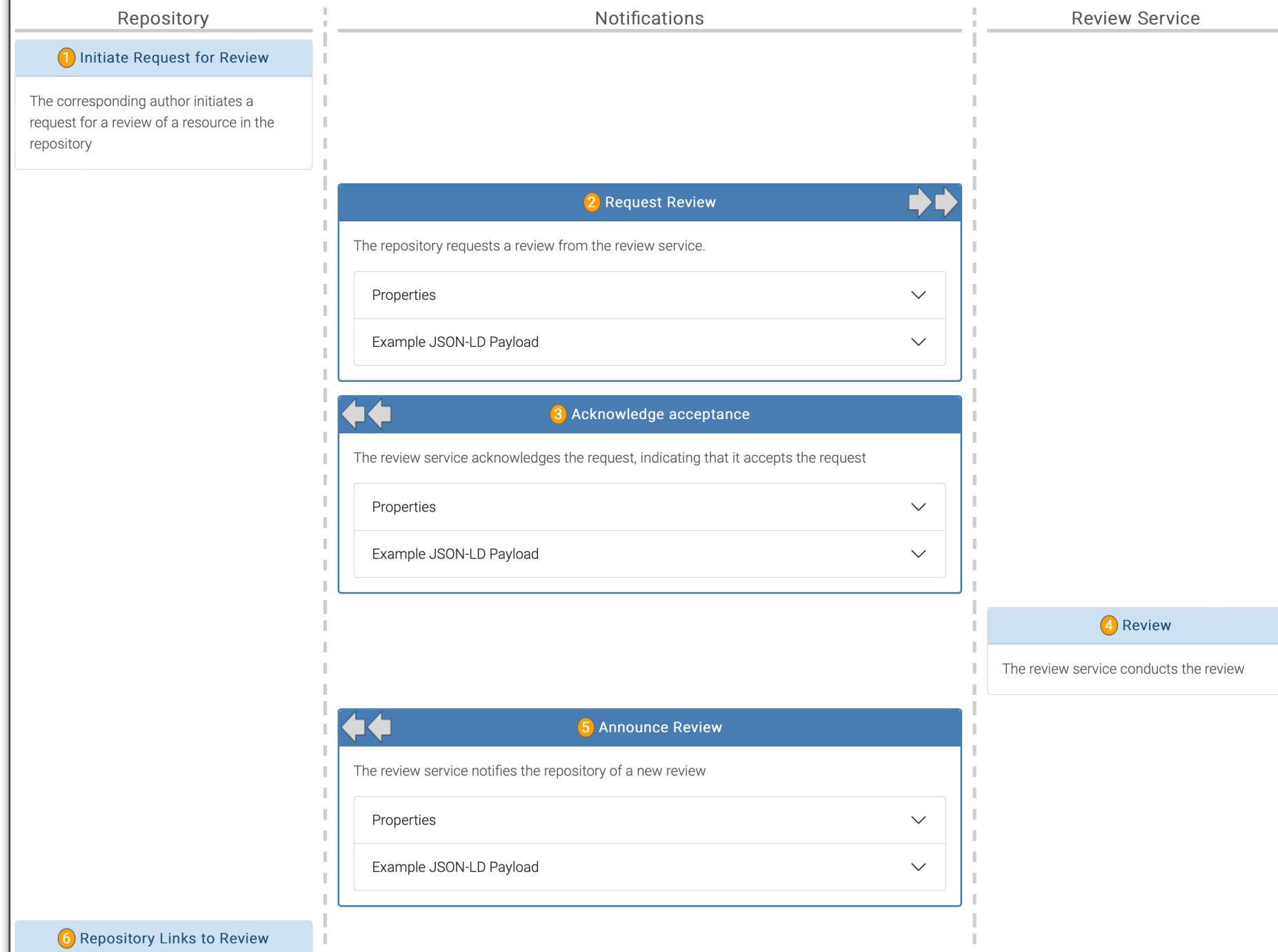
```
{
  "@context": [
    "https://www.w3.org/ns/activitystreams",
    "https://purl.org/coar/notify"
  ],
  "actor": {
    "id": "https://generic-service.com",
    "name": "Generic Service",
    "type": "Service"
  },
  "context": {
    "id": "https://some-organisation.org/resource/0021",
    "ietf:cite-as": "https://doi.org/10.4598/12123487",
    "type": "Document"
  },
  "id": "urn:uuid:94ecae35-dcfd-4182-8550-22c7164fe23f",
  "inReplyTo": "urn:uuid:0370c0fb-bb78-4a9b-87f5-bed307a509dd",
  "object": {
    "id": "https://generic-service.com/resource/1234",
    "ietf:cite-as": "https://doi.org/10.9357/123003",
    "type": "Document"
  },
  "origin": {
    "id": "https://generic-service.com/system",
    "inbox": "https://generic-service.com/system/inbox/",
    "type": "Service"
  },
  "target": {
    "id": "https://some-organisation.org/system",
    "inbox": "https://some-organisation.org/system/inbox/",
    "type": "Service"
  },
  "type": "Announce"
}
```

Scenarios

Scenario 5: Repository requests review (on behalf of corresponding author)

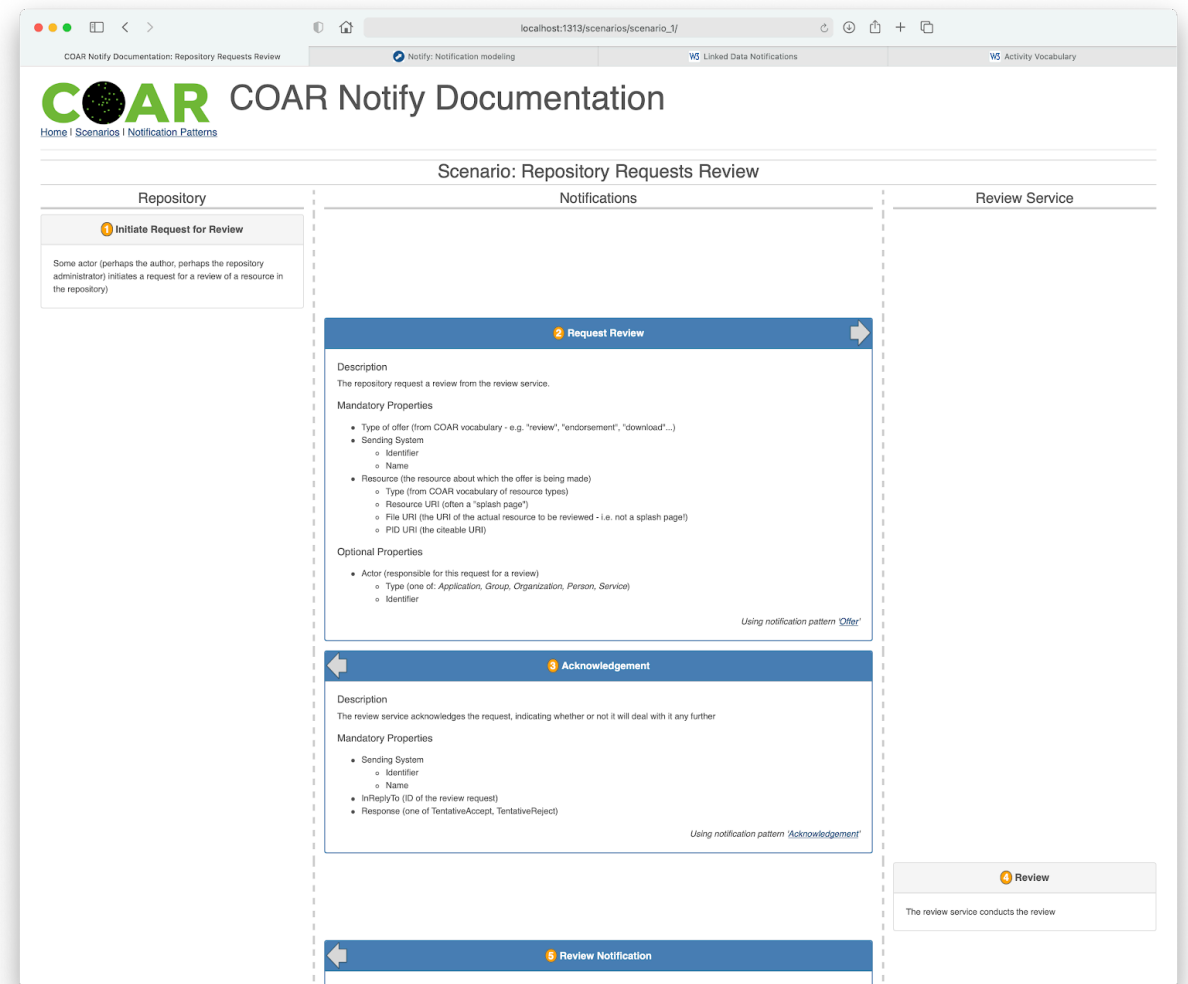
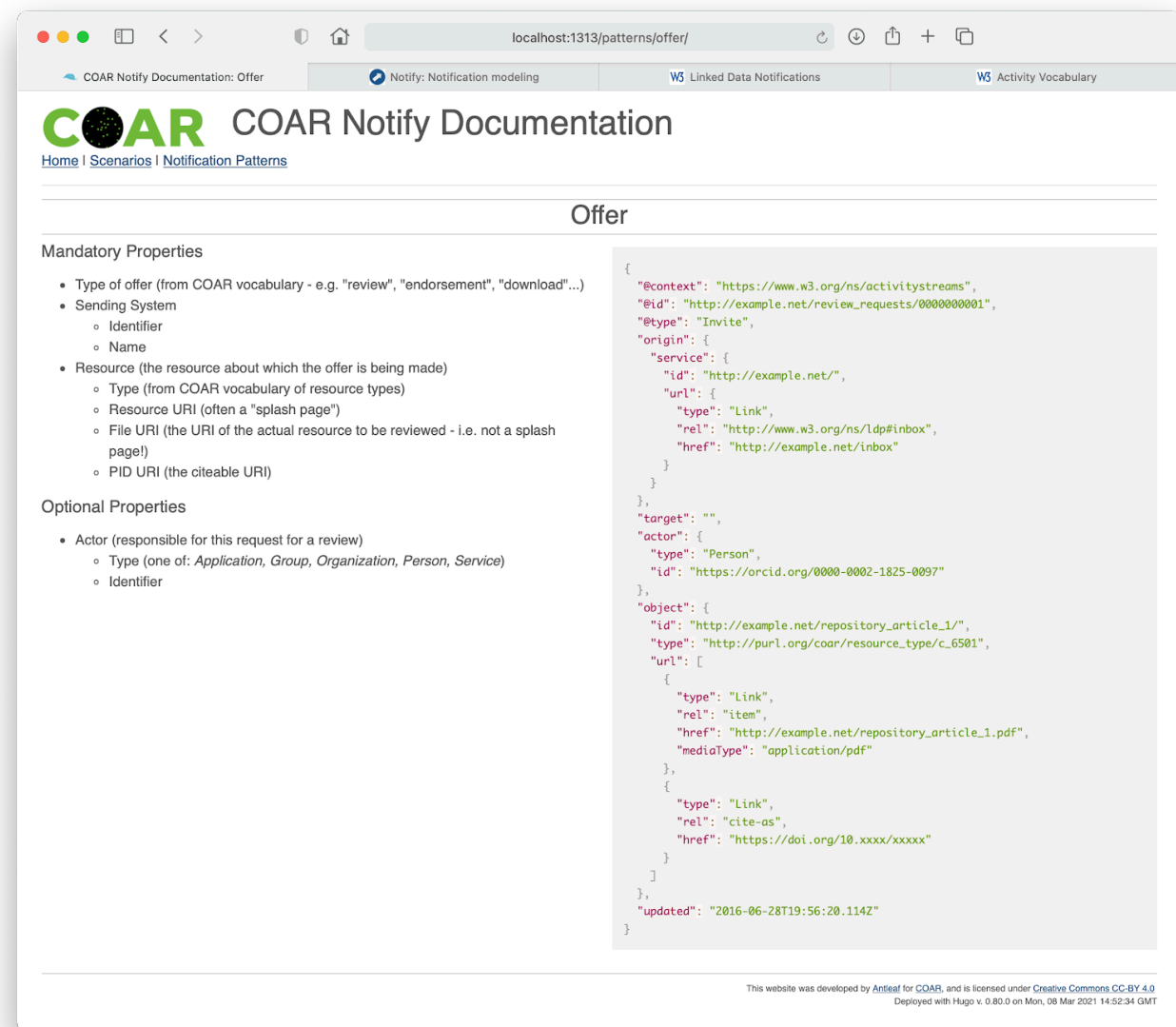
See these use-cases to understand this scenario in context: [Peer-review](#)

Initiated by the corresponding author, a repository requests a review for one of its resources from a trusted review service



Supporting infrastructure

Documentation



Supporting infrastructure

LDN Inbox

| Message ID | Source | Timestamp |
|--|--------------------|------------------|
| 0a43ff88-adf3-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 05/05/21 22:41:3 |
| 32ff2574-af4c-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 05/07/21 15:52:3 |
| 38116814-af70-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 05/07/21 20:10:0 |
| 432c8d42-adf3-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 05/05/21 22:43:0 |
| 472b464a-c3e2-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 06/02/21 20:36:5 |
| 48f2054c-ba58-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 05/21/21 17:16:3 |
| 4b51e2ee-9d7a-11eb-b882-003ee1c0bc37 | localhost:8088 | 04/14/21 17:36:5 |
| 4b88dc7a-adf8-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 05/05/21 23:19:0 |
| 4cd75fba-ac28-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 05/03/21 15:57:4 |
| 4f7f6e2e-bf4c-11eb-9f23-6fb78270d389 | 160.1.118.115:8088 | 05/28/21 00:33:2 |
| 647903f8-a12e-11eb-9f23-6fb78270d389 | | |
| 6e162da6-c3e2-11eb-9f23-6fb78270d389 | | |
| 9c2b9176-a147-11eb-9f23-6fb78270d389 | | |
| a8ceaf4a-a146-11eb-9f23-6fb78270d389 | | |
| ba3e4f56-c3e2-11eb-9f23-6fb78270d389 | | |
| d5b69ec8-9e3a-11eb-9f23-6fb78270d389 | | |
| d8e767ee-9e3a-11eb-9f23-6fb78270d389 | | |
| f5128b1a-a6cd-11eb-9f23-6fb78270d389 | | |

Payload as RDF (Turtle)

```
@prefix ns0: <https://www.w3.org/ns/activitystreams> .
@prefix ns1: <https://orcid.org/> .
ns1:0000-0002-1825-0097 a ns0:Person .
@prefix ns2: <http://www.w3.org/ns/ldp#> .
ns1:0000-0002-1825-0097 ns2:inbox "https://jcarberry.org/" .
ns0:name "Josiah Carberry" .
@prefix ns3: <https://doi.org/10.4598/> .
@prefix ns4: <http://www.iana.org/assignments/relations/> .
@prefix ns5: <https://origin-system.org/resource/> .
ns5:0021 ns4:cite-as ns3:12123487 ;
a ns0:Document .
@prefix ns6: <https://> .
ns6:origin-system.org a ns0:Service ;
ns2:inbox "https://origin-system.org/inbox/" ;
ns6:target-system.org a ns0:Service ;
ns2:inbox "https://target-system.org/inbox/" ;
<urn:uuid:0370c0fb-bb78-4a9b-87f5-bed307a509c>
ns0:actor ns1:0000-0002-1825-0097 ;
ns0:object ns5:0021 ;
ns0:origin ns6:origin-system.org ;
ns0:target ns6:target-system.org .
```

Payload as RDF (NQuads)

```
<urn:uuid:0370c0fb-bb78-4a9b-87f5-bed307a509c>
ns0:actor ns1:0000-0002-1825-0097 ;
ns0:object ns5:0021 ;
ns0:origin ns6:origin-system.org ;
ns0:target ns6:target-system.org .
```

ldninbox.antleaf.com/inbox/2655f469-7548-468a-a2fa-5edccef0225

COAR Notify Echo System Home | Inbox

Notification

Metadata for posted notification

Activity ID

urn:uuid:0ecd0a13-53e9-46f3-ac23-4e55e29e856b

Notification URL (this page)

https://ldninbox.antleaf.com/inbox/2655f469-7548-468a-a2fa-5edccef0225

Created

2022-04-26 15:02:03

Sender

139.162.203.213

HTTP Response Code

201

JSON-LD Process Log

Appears to be valid JSON-LD

HTTP Request Headers

Accept: */*
Accept-Encoding: gzip
Cdn-Loop: cloudflare
Cf-Connecting-Ip: 51.158.99.164
Cf-Ipcountry: FR
Cf-Ray: 7020327d687340d5-LHR
Cf-Visitor: {"scheme":"https"}
Content-Length: 1044
Content-Type: application/ld+json
User-Agent: pcli (https://compstat.peercommunityin.org/)
X-Forwarded-For: 139.162.203.213
X-Forwarded-Host: ldninbox.antleaf.com
X-Forwarded-Port: 443
X-Forwarded-Proto: https
X-Original-Forwarded-For: 51.158.99.164
X-Real-Ip: 139.162.203.213
X-Request-Id: e7ee02a62c53ef5cfb27f3878ee67ae
X-Scheme: https

HTTP Response Headers

Content-Type: text/html; charset=UTF-8
Location: https://ldninbox.antleaf.com/inbox/2655f469-7548-468a-a2fa-5edccef0225

Payload as RDF (Turtle)

```
@prefix ns0: <https://doi.org/10.1101/> .
@prefix ns1: <http://www.iana.org/assignments/relations/> .
@prefix ns2: <https://compstat.peercommunityin.org/articles/rec?articleId=75#> .
```

Payload

```
{
  "@context": [
    "https://www.w3.org/ns/activitystreams",
    "https://purl.org/coar/notify"
  ],
  "actor": {
    "id": "https://compstat.peercommunityin.org/public/user_public_page?userId=205",
    "name": "OFA .",
    "type": [
      "Person"
    ]
  },
  "context": {
    "id": "https://compstat.peercommunityin.org/articles/rec?articleId=75#article=75",
    "ietf:cite-as": "https://doi.org/10.1101/2021.08.01.454679",
    "type": "sorg:AboutPage"
  },
  "id": "urn:uuid:0ecd0a13-53e9-46f3-ac23-4e55e29e856b",
  "object": {
    "id": "https://compstat.peercommunityin.org/articles/rec?articleId=75#review=195",
    "type": [
      "Document",
      "sorg:Review"
    ]
  },
  "origin": {
    "id": "https://compstat.peercommunityin.org/coar_notify/",
    "inbox": "https://compstat.peercommunityin.org/coar_notify/inbox/",
    "type": [
      "Service"
    ]
  },
  "target": {
    "inbox": "https://ldninbox.antleaf.com/inbox/",
    "type": [
      "Service"
    ]
  },
  "type": [
    "Announce",
    "coar-notify:ReviewAction"
  ]
}
```

Implementations

Implementations, so far...

In active development

- Repository platforms
 - DSpace 5/6
 - DataVerse
 - HAL
- Other systems
 - Peer Community In (PCI)
 - Episcience

Considering development

- Repository platforms
 - Invenio (& Zenodo)
 - DSpace 7
 - Humanities Commons
- Other systems
 - PreReview
 - eLife

Can we include Samvera / Hyrax? 😊

Thanks!

<https://notify.coar-repositories.org>

paul@paulwalk.net